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<110> Altboum, Zeev Barry, Eileen M. Levine, Myron M.

University of Maryland

<120> ISOLATION AND CHARACTERIZATION OF THE CSA OPERON <130> UOFMD.006A

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ega aat agc gag tta att cgt gtt tat tca aaa tca aaa gag ata caa 144 Gly Asn Ser Glu Leu Ile Arg Val Tyr Ser Lys Ser Lys Glu Ile Gln 35 40

tat ata aaa ata tat aca aaa aag att att aat ccc ggc aca act gaa 192 Tyr Ile Lys Ile Tyr Thr Lys Lys Ile Ile Asn Pro Gly Thr Thr Glu 50

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act caa ttt aga ata cca aaa aaa gag gaa att tat aga gta tat ttt Thr Gln Phe Arg Ile Pro Lys Lys Glu Glu Ile Tyr Arg Val Tyr Phe 100 105

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4/20/01

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SEQUENCE LISTING

<110> Altboum, Zeev Barry, Eileen M. Levine, Myron M.

University of Maryland

<120> ISOLATION AND CHARACTERIZATION OF THE CSA OPERON

<130> UOFMD.006A

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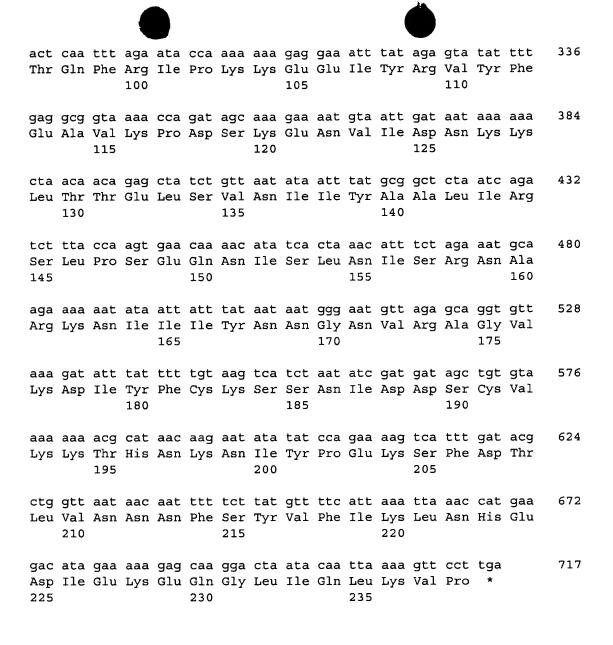
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Tyr Ile Lys Ile Tyr Thr Lys Lys Ile Ile Asn Pro Gly Thr Thr Glu
50 55 60

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<213> E. coli

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				_	Gly 999											1248

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ggt Gly													1344
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ggt Gly 465													1440
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tca Ser													1536
aac Asn				_			-						1584
tct Ser			_	_				_	_				1632
aac Asn 545	_		_		_		_		 			_	1680
act Thr		_	_	_	_	_				_			1728
tac Tyr			_										1776
gga Gly													1824
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ata Ile 625													1920

								cat His								1968
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_		_			-		_	gat Asp		_				_		2400
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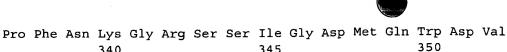
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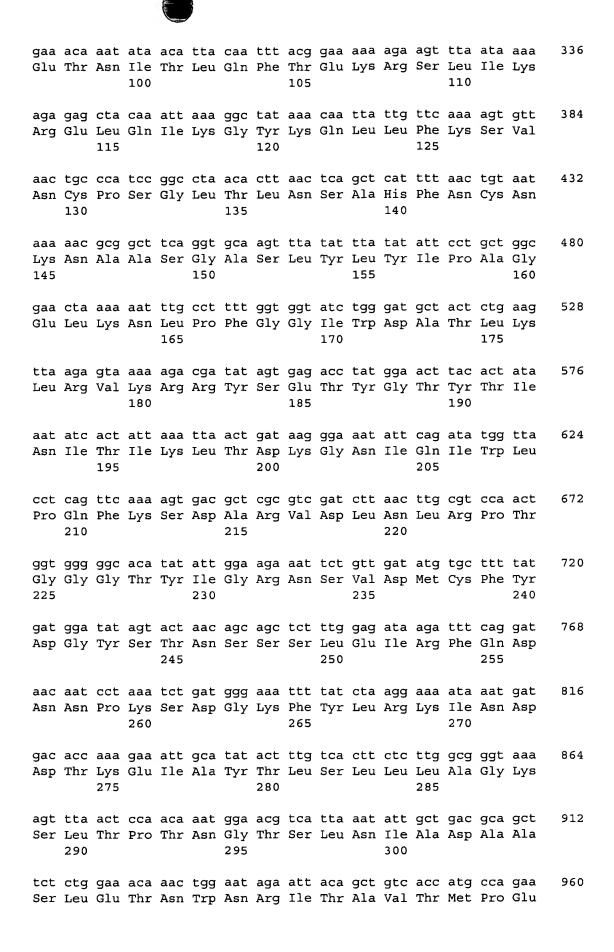


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770	77	5		780		
Leu Asn Glu Pro 785	His Val Il 790	e Leu Asp	Glu Asp 795	Gly Gly	Phe Ser	Phe 800
Glu Tyr Thr Gly	Asn Glu Ly 805	s Thr Leu	Phe Leu 810	Leu Lys	Gly Arg 815	Thr
Ile Tyr Thr Cys 820	Gln Leu Gl	y Lys Asn 825	Lys Val	His Lys	Gly Ile 830	Val
Phe Val Gly Asp 835	Val Ile Cy	s Asp Val 840	Asn Ser	Thr Ser 845	Ser Leu	Pro
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Ile Ser Val Arg		s Gln Ile	Leu Ser		Pro Tyr	
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65	70	5 1111 014	75	DyS IIII	Dea Dea	80
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gta tta aaa aat Val Leu Lys Asn						
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Met Ile Ile Tyr Gly Met Ser Lys Ile Asp Thr Asn Asp Cys Arg Asn
Met Ser Arg Lys Ile Met Lys Thr Glu Val Asp Lys Thr Leu Leu Asp
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                                                                   96
Phe Thr Phe Ala Val Ser Ala Asp Lys Ile Pro Gly Asp Glu Ser Ile
             20
act aat att ttt ggc ccg cgt gac agg aac gaa tct tcc ccc aaa cat
                                                                   144
Thr Asn Ile Phe Gly Pro Arg Asp Arg Asn Glu Ser Ser Pro Lys His
                             40
aat ata tta aat aac cat att aca gca tac agt gaa agt cat act ctg
                                                                   192
Asn Ile Leu Asn Asn His Ile Thr Ala Tyr Ser Glu Ser His Thr Leu
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                         55
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Tyr Asp Arg Met Thr Phe Leu Cys Leu Ser Ser His Asn Thr Leu Asn
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rocato tonoundu

320 305 315 310

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Glu Leu Lys Asn Leu Pro Phe Gly Gly Ile Trp Asp Ala Thr Leu Lys Leu Arg Val Lys Arg Arg Tyr Ser Glu Thr Tyr Gly Thr Tyr Thr Ile Asn Ile Thr Ile Lys Leu Thr Asp Lys Gly Asn Ile Gln Ile Trp Leu 200 Pro Gln Phe Lys Ser Asp Ala Arg Val Asp Leu Asn Leu Arg Pro Thr 215 Gly Gly Gly Thr Tyr Ile Gly Arg Asn Ser Val Asp Met Cys Phe Tyr 235 Asp Gly Tyr Ser Thr Asn Ser Ser Ser Leu Glu Ile Arg Phe Gln Asp 245 250 Asn Asn Pro Lys Ser Asp Gly Lys Phe Tyr Leu Arg Lys Ile Asn Asp

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Ile Ser Val Pro Val Leu Cys Trp Pro Gly Arg Leu Gln Leu Asp Ala
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Ser Thr Ile Ile Gly Ile Tyr Phe * His Thr Ile Tyr Tyr His Gln	

1665 1670 1675

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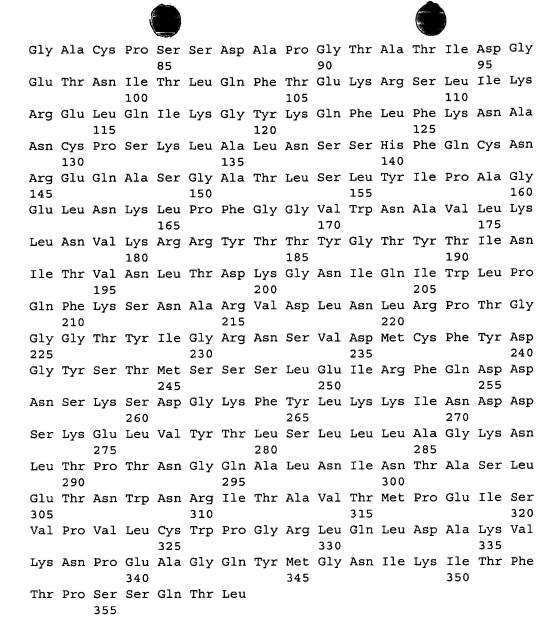
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 10
 15
 15

 Tyr
 Gly
 Gln
 Ser
 Trp
 His
 Thr
 Asn
 Val
 Glu
 Ala
 Gly
 Ser
 Ile
 Asn
 Lys

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 Asp
 Arg
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 Tyr
 Asp
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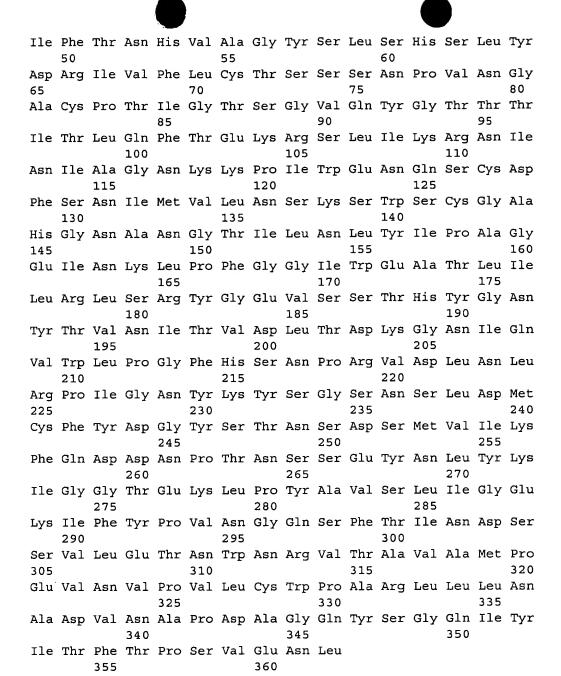
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Ile Ile Asn Phe Ile Arg Lys Tyr Val Tyr Pro Ala Arg Ile Ile Ala
20 25 30



Ile Leu Ala Gly Ala Thr Leu Pro Gln Val Ala Asp Ala Ile Thr Val Asp Leu Asn Tyr Asp Lys Asn Asn Val Ala Val Ile Thr Pro Val Trp 55 Ser Gln Glu Trp Ser Val Ala Asn Val Leu Gly Gly Trp Val Cys Arg 75 70 Ser Asn Arg Asn Glu Asn Glu Gly Cys Glu Glu Thr His Leu Val Trp Trp Tyr Ala Phe Gly Ala Tyr Ser Ile Arg Leu Arg Phe Arg Glu Gln 105 Ile Ser His Ala Glu Ile Thr Leu Ile Leu Leu Gly Ser Val Arg Asp 120 Ala Cys Thr Gly Val Ile Asn Met Asn Ala Ala Cys Gln Trp Gly Arg Ser Leu Lys Leu Arg Ile Pro Ser Glu Glu Leu Ala Lys Ile Pro 150 155 Thr Ser Gly Thr Trp Lys Ala Thr Leu Val Leu Asp Tyr Leu Gln Trp 165 170 Gly Gly Asp Asp Pro Leu Gly Thr Ser Thr Thr Asp Ile Thr Leu Asn 185 190 Val Thr Asp His Phe Ala Glu Asn Ala Ile Tyr Phe Pro Gln Phe 200 Gly Thr Ala Thr Pro Arg Val Asp Leu Asn Leu His Arg Met Asn Ala 215 Ser Gln Met Ser Gly Arg Ala Asn Leu Asp Met Cys Leu Tyr Asp Gly 235 230 Gly Val Lys Ala Arg Ser Leu Gln Met Met Glu Gly Ser Asn Lys Ser 245 250 Gly Thr Gly Phe Gln Val Ile Lys Ser Asp Ser Ala Asp Thr Ile Asp Tyr Ala Val Ser Met Asn Tyr Gly Gly Arg Ser Ile Pro Val Thr Arg 280 Gly Val Glu Phe Ser Leu Asp Asn Val Asp Lys Ala Ala Thr Arg Pro 295 Val Val Leu Pro Gly Gln Arg Gln Ala Val Arg Cys Val Pro Val Pro 310 315 Leu Thr Leu Thr Thr Gln Pro Phe Asn Ile Arg Glu Lys Arg Ser Gly 325 330 Glu Tyr Gln Gly Thr Leu Thr Val Thr Met Leu Met Gly Thr Gln Thr 340 345 Pro

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:220>

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<400> 33

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Val Ala Met Ser Ala Ser Ala Val Glu Lys Asn Ile Thr Val Thr Ala 25 Ser Val Asp Pro Thr Ile Asp Ile Leu Gln Ala Asp Gly Ser Ser Leu Pro Thr Ala Val Glu Leu Thr Tyr Ser Pro Ala Ala Ser Arg Phe Glu 55 Asn Tyr Lys Ile Ala Thr Lys Val His Thr Asn Val Ile Asn Lys Asn Val Leu Val Lys Leu Val Asn Asp Pro Lys Leu Thr Asn Val Leu Asp 90 Ser Thr Lys Gln Leu Pro Ile Thr Val Ser Tyr Gly Gly Lys Leu Ser 105 Thr Ala Asp Val Thr Phe Glu Pro Ala Glu Leu Asn Phe Gly Thr Ser 120 Gly Val Thr Gly Val Ser Ser Ser Gln Asp Leu Val Ile Gly Ala Thr 135 Thr Ala Gln Ala Pro Ser Ala Asn Tyr Ser Gly Val Val Ser Ile Leu 150 155 Met Thr Leu Ala Ser 165

<210> 34 <211> 168 <212> PRT

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<220>

<223> ETEC Protein Homology Sequence

<400> 34

Met Lys Phe Lys Lys Thr Ile Gly Ala Met Ala Leu Thr Thr Met Phe Val Ala Val Ser Ala Ser Ala Val Glu Lys Asn Ile Thr Val Thr Ala 25 Ser Val Asp Pro Ala Ile Asp Leu Leu Gln Ala Asp Gly Asn Ala Leu Pro Ser Val Lys Leu Ala Tyr Ser Pro Ala Ser Lys Ile Phe Glu Ser 55 Tyr Arg Val Met Thr Gln Val His Thr Asn Asp Ala Thr Lys Lys Val Ile Val Lys Leu Ala Asp Thr Pro Gln Leu Thr Asp Val Leu Asn Ser Thr Val Gln Met Pro Ile Ser Val Ser Trp Gly Gly Val Leu Ser Thr 105 Thr Ala Lys Glu Phe Glu Ala Ala Ala Leu Gly Tyr Ser Ala Ser Gly 120 Val Asn Gly Val Ser Ser Ser Gln Glu Leu Val Ile Ser Ala Ala Pro 135 Lys Thr Ala Gly Thr Ala Pro Thr Ala Gly Asn Tyr Ser Gly Val Val 155

165

Ser Leu Val Met Thr Leu Gly Ser

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Ala Thr Met Gly Ala Ser Ala Val Glu Lys Thr Ile Ser Val Thr Ala
                                25
Ser Val Asp Pro Thr Val Asp Leu Leu Gln Ser Asp Gly Ser Ala Leu
Pro Asn Val Ala Leu Thr Tyr Ser Pro Ala Val Asn Asn Phe Glu Ala
                        55
His Thr Ile Asn Thr Val Val His Thr Asn Asp Ser Asp Lys Gly Val
                                        75
Val Val Lys Leu Ser Ala Asp Pro Val Leu Ser Asn Val Leu Asn Pro
                                    90
Thr Leu Gln Ile Pro Val Ser Val Asn Phe Ala Gly Lys Pro Leu Ser
Thr Thr Gly Ile Thr Ile Asp Ser Asn Asp Leu Asn Phe Ala Ser Ser
                            120
Gly Val Asn Tyr Val Ser Ser Thr Gln Lys Leu Ser Ile His Ala Asp
                        135
Ala Thr Arg Val Thr Gly Gly Ala Leu Thr Ala Gly Gln Tyr Gln Gly
                    150
Leu Val Ser Ile Ile Leu Thr Lys Ser Thr
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<210> 36
<211> 170
<212> PRT
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<400> 36
Met Lys Leu Asn Lys Ile Ile Gly Ala Leu Val Leu Ser Ser Thr Phe
Val Ser Met Gly Ala Ser Ala Ala Glu Lys Asn Ile Thr Val Thr Ala
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Ser Val Asp Pro Thr Ile Asp Leu Met Gln Ser Asp Gly Thr Ala Leu
Pro Ser Ala Val Asn Ile Ala Tyr Leu Pro Gly Glu Lys Arg Phe Glu
                        55
Ser Ala Arg Ile Asn Thr Gln Val His Thr Asn Asn Lys Thr Lys Gly
Ile Gln Ile Lys Leu Thr Asn Asp Asn Val Val Met Thr Asn Leu Ser
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Asp Pro Ser Lys Thr Ile Pro Leu Glu Val Ser Phe Ala Gly Thr Lys
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